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(54) Compressed-air nail firing tool

(57) A compressed-air nail firing tool comprising a body (2), inside which means for the actuation of a striking blade adapted to engage a firing channel are accommodated, the firing channel being formed along a tube (5) which lies in a front region of the body (2), and a magazine (7), which is rigidly coupled to the body (2) and is connected to the firing channel and inside which a ribbon of nails (10) is adapted to be loaded, the nails (10) being meant to be fed individually to the firing channel, under the actuation of an advancement device which is associated with the magazine (7), wherein in a region for feeding to the firing channel (4) the nails (10) are guided with their respective head (11) along a slot (23) which leads into the firing channel (4).

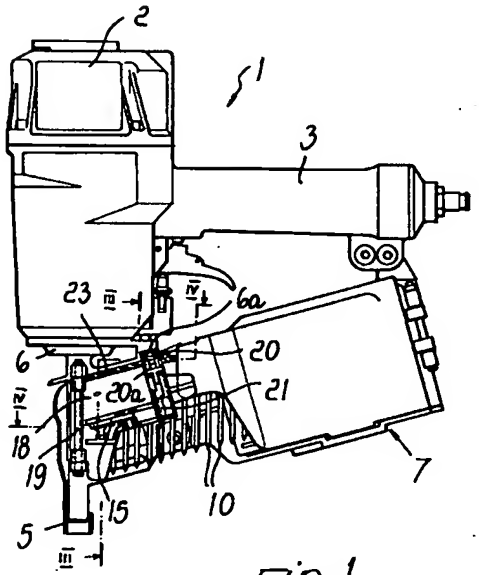

Fig. 1

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Description

[0001] The present invention relates to a compressed-air nail firing tool.

[0002] It is known to use compressed-air nail firing tools which are adapted to fire metal nails, for example for fixing wood items and the like. Said nail firing tools are substantially constituted by a body which lies above a handle which can be connected to a compressed air delivery hose; means for the actuation of a striking blade in a piston-like fashion are accommodated inside said body. The striking blade is adapted to engage a firing channel formed along a tube which protrudes from a head which is fixed in a front region to the nail firing tool body.

[0003] The nails to be fired are fed sequentially to the firing channel from a magazine which is rigidly coupled to the nail firing tool, below the tube, inside which a ribbon of nails, rolled into a reel, is loaded. The nails are mutually parallel along said ribbon on an axis which is substantially transverse to the longitudinal extension of the belt.

[0004] The nails are fed individually to the firing channel under the control of an advancement device which is associated with the magazine. In practice, the device actuates the stepwise advancement of the ribbon of nails loaded in the magazine, placing the first nail of the ribbon at the firing channel, where the nail is struck forcefully by the striking mass.

[0005] The nail ribbons used with the above described nail firing tools are currently manufactured in various ways.

[0006] In particular, in the case of roundhead nails, ribbons are known which are constituted by a strip of plastics which is shaped so as to form a series of clips which are adapted to retain the nails. As shown by way of example in Figure 5, the nails 10 are retained by the strip 12 proximate to the respective head 11; the strip 12 forms the clips 13, which individually retain the nails 10 in two appropriately spaced points.

[0007] According to another conventional solution, the nails are mutually rigidly coupled by two thin metal wires which are soldered on one side of said nails.

[0008] The nail ribbon must be guided appropriately in the magazine of the nail firing tool, particularly at the region for feeding the nails to the firing channel formed by the tube.

[0009] For this purpose, if ribbons of nails retained by a strip of plastics are used, the magazine is provided internally for example with a slotted guide in which the strip of plastics is slidingly inserted.

[0010] If instead ribbons of nails retained by two soldered metal wires are used, the metal wires slide inside corresponding grooves formed by the magazine.

[0011] In order to use both types of nail ribbon it is therefore necessary to use suitable adaptors, such as for example removable guides to be applied to the magazine if the ribbons of nails retained by a strip of plastics are used.

[0012] This of course makes the structure of the nail firing tool more complicated, with a greater risk of breakage and abnormal operation, and also makes the nail firing tool more difficult to use if it is necessary to change the type of nail ribbon.

[0013] The aim of the present invention is to solve the cited problem by providing a compressed-air nail firing tool which allows optimum feeding of the nails to the firing channel both when using ribbons of nails retained by a strip of plastics and when using ribbons of nails retained by soldered metal wires.

[0014] Within the scope of this aim, an object of the present invention is to provide a compressed-air nail firing tool which is simple in concept, definitely reliable in operation and versatile in use.

[0015] This aim and this object are both achieved by a compressed-air nail firing tool according to the present invention, comprising: a body wherein a firing channel is defined, means for the actuation of a striking blade adapted to engage a firing channel being accommodated in said body, said firing channel being formed along a tube which lies in a front region of said body; and a magazine, which is rigidly coupled to said body and is connected to said firing channel and inside which a ribbon of nails is adapted to be loaded, said nails being meant to be fed individually to said firing channel, under the actuation of an advancement device which is associated with said magazine, characterized in that a slot, which leads into said firing channel, is defined in a region for feeding said nails to said firing channel, said nails being guided with their respective head along said slot.

[0016] The details of the invention will become apparent from the detailed description of a preferred embodiment of the compressed-air nail firing tool, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a general side view of the compressed-air nail firing tool according to the invention;
Figure 2 is a detail side view of the region for feeding the nails into the firing channel of the nail firing tool, with the cover turned over and detached to show the internal part of said region;
Figures 3 and 4 are, respectively, sectional views taken along the planes III-III and IV-IV of Figure 1, respectively.

[0017] With reference to the above figures, the reference numeral 1 generally designates the compressed-air nail firing tool, which is adapted to fire nails 10.

[0018] The nail firing tool 1 is constituted by a body 2 which, in a conventional manner, lies above a handle 3 which is to be connected to a compressed air delivery hose. Means, not shown, for the piston-like actuation of an adapted striking blade are accommodated inside the body 2. The striking blade is adapted to engage a firing

channel 4 (see Figure 4) formed along a tube 5 which protrudes from a head 6 fixed in a front region to the body 2 of the nail firing tool.

[0019] The nails 10 are fed to the firing channel 4 by a magazine 7 which is rigidly coupled to the nail firing tool, below the handle 3, and inside which a coiled ribbon of nails 10 is loaded.

[0020] The nails 10 are fed individually to the firing channel 4 under the actuation of a per se known advancement device 8 which is associated with the magazine 7. The advancement device 8 is provided with a ratchet system 9 which is adapted to act on the ribbon of nails 10 under the actuation of an adapted actuator 9a which is constituted by a pneumatic cylinder. In practice, the ratchet system 9 of the device 8 actuates the stepwise advancement of the ribbon of nails 10 loaded in the magazine 7, placing the first nail of the ribbon at the firing channel 4, where said nail is struck by the striking blade.

[0021] A stop device 14 cooperates with the advancement device 8 and is adapted to prevent the elastic return of the ribbon of nails 10. The stop device 14 is provided with a lever 15 which is hinged on a fulcrum 16, is adapted to engage the ribbon of nails 10 and is actuated elastically by a spring 17.

[0022] The stop device 14 is supported by a cover 18 which is articulated at the tube 5 of the nail firing tool by means of a pivot 19. The cover 18 can be locked in a closed position by means of a pin 20 which is guided in a seat of the cover 18 and is actuated elastically by a corresponding spring 21. The pin 20, which by means of the spring 21 is adapted to engage in a hole 6a of the head 6, can be disengaged by acting on a lever 20a which protrudes from the pin 20 through a longitudinal slot of the guiding seat.

[0023] The cover 18 forms a channel 22 which has a substantially trapezoidal profile and in which a strip 12 of plastics that retains the nails 10, as shown in particular in Figure 3, is adapted to be guided.

[0024] During feeding to the firing channel 4, the nails 10 are guided by means of a portion of their respective head 11 along a slot 23 formed in a plate 24, on which the cover 18 closes; conveniently, the plate 24 is formed monolithically with the tube 5 of the nail firing tool.

[0025] The slot 23 leads into the firing channel 4.

[0026] The portion of the head 11 of the nails 10 that protrudes from the slot 23 on the opposite side with respect to the plate 24 is guided so as to rest on a wing 25 which shapes an edge of the cover 18 and delimits the channel 22 in an upward region (Figure 3).

[0027] The operation of the nail firing tool is easily understandable from the above description.

[0028] The ribbon of nails 10 inserted in the magazine 7 unwinds, at the region for feeding said nails 10 to the firing channel 4, between the plate 24 and the cover 18 which is pivoted to the tube 5 and locked by means of the pin 20.

[0029] In the feeding region, the nails are guided along the slot 23 by the respective head 11, which furthermore slides so as to rest on the wing 25 of the cover 18.

[0030] This embodiment ensures correct feeding of the nails 10 into the firing channel 4, independently of the fact that the nails 10 are retained by the strip 12 of plastics or by soldered wires.

[0031] The fact should be noted in particular that this solution does not require the use of removable adaptors or the like if ribbons of nails retained by a plastic strip are used; said strip runs along the channel 22 formed by the cover 18.

[0032] The problem of providing optimum feeding of the nails to the firing channel both when using ribbons of nails retained by a strip of plastics and ribbons of nails retained by soldered metal wires is therefore solved in a simple way.

[0033] In the practical embodiment of the invention, the materials used, as well as the shapes and the dimensions, may be any according to the requirements.

[0034] The disclosures in Italian Patent Application No. BO98A000005 from which this application claims priority are incorporated herein by reference.

[0035] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A compressed-air nail firing tool comprising: a body (2) wherein a firing channel (4) is defined, means for the actuation of a striking blade adapted to engage a firing channel (4) being accommodated in said body, said firing channel being formed along a tube (5) which lies in a front region of said body (2); and a magazine (7), which is rigidly coupled to said body (2) and is connected to said firing channel (4) and inside which a ribbon of nails (10) is adapted to be loaded, said nails being meant to be fed individually to said firing channel (4), under the actuation of an advancement device (8) which is associated with said magazine (7), characterized in that a slot (23), which leads into said firing channel (4), is defined in a region for feeding said nails to said firing channel (4), said nails (10) being guided with their respective head (11) along said a slot (23).

2. The nail firing tool according to claim 1, characterized in that said slot (23) for guiding the head (11) of said nails (10) is formed in a plate (24) which is associated with said tube (5) and is adapted to be closed by a cover (18) hinged at said tube (5), said ribbon of nails (10) unwinding between said plate (24) and said cover (18).

3. The nail firing tool according to claim 2, characterized in that said head (11) of the nails (10) protrudes with respect to said plate (24) with a portion which is guided so as to rest on an edge (25) of said cover (18).

4. The nail firing tool according to claim 3, characterized in that said edge forms a wing (25) which forms a channel (22) in which a strip (12) of plastics which retains said nails (10) is adapted to be guided.

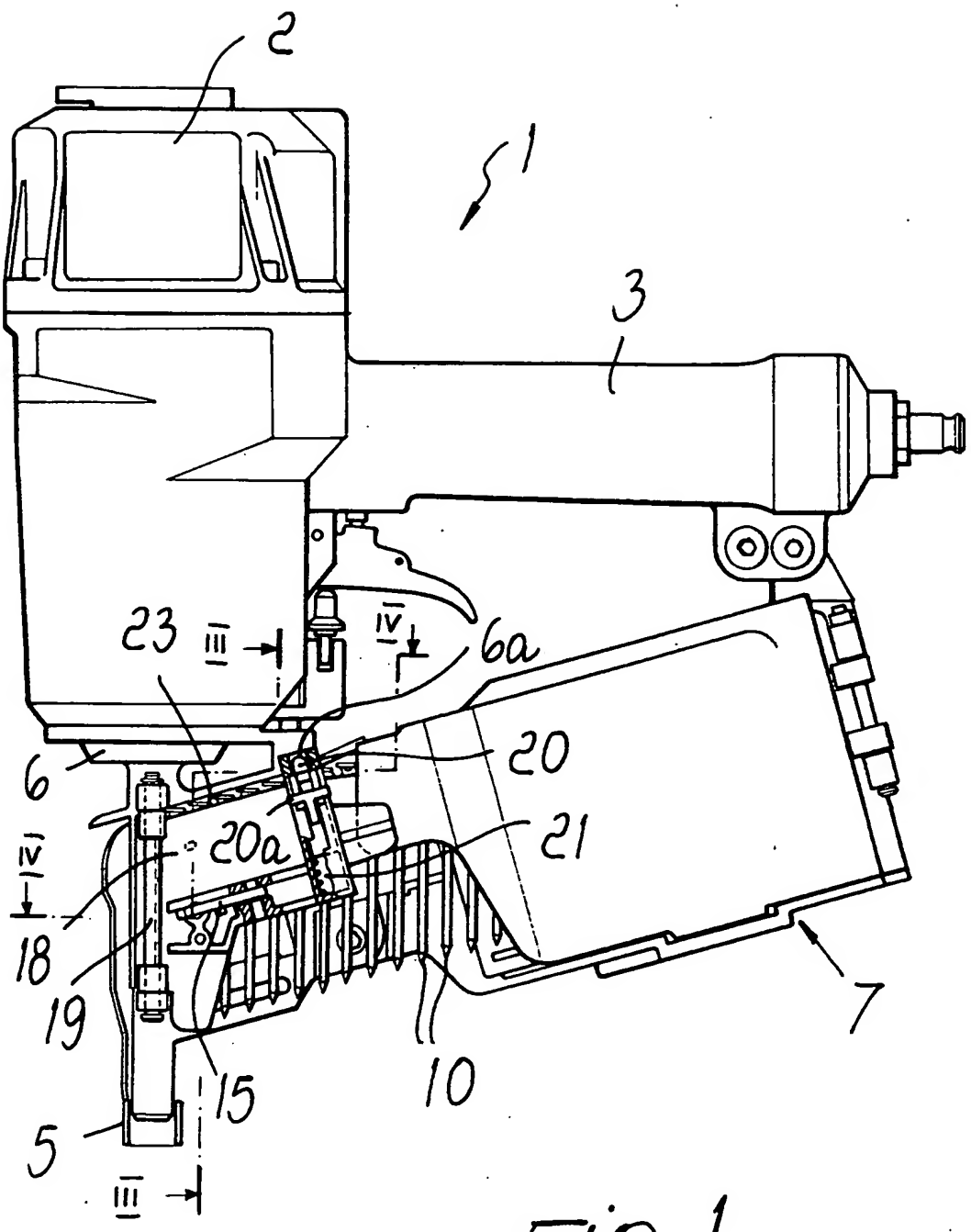

Fig. 1

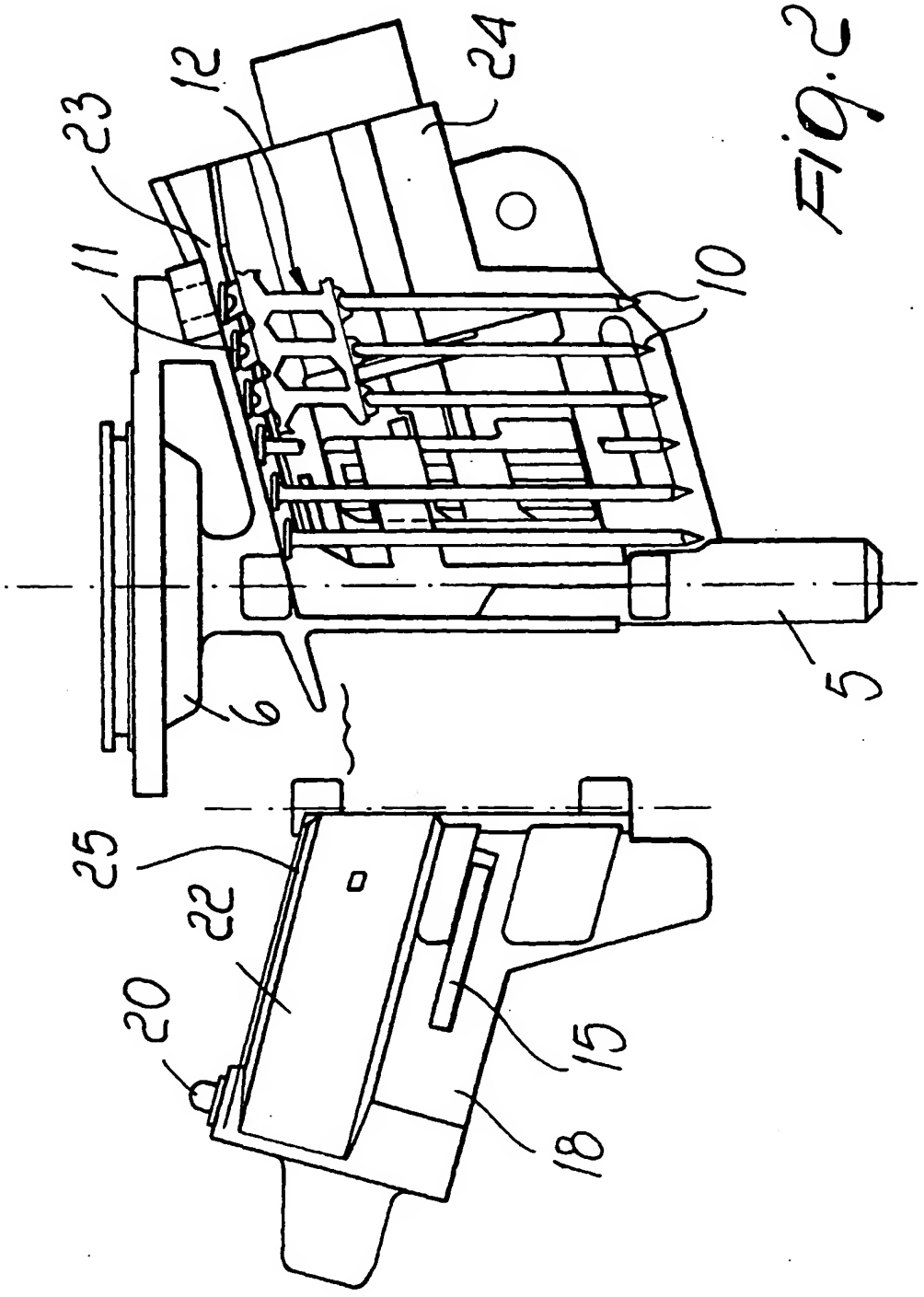

Fig.2

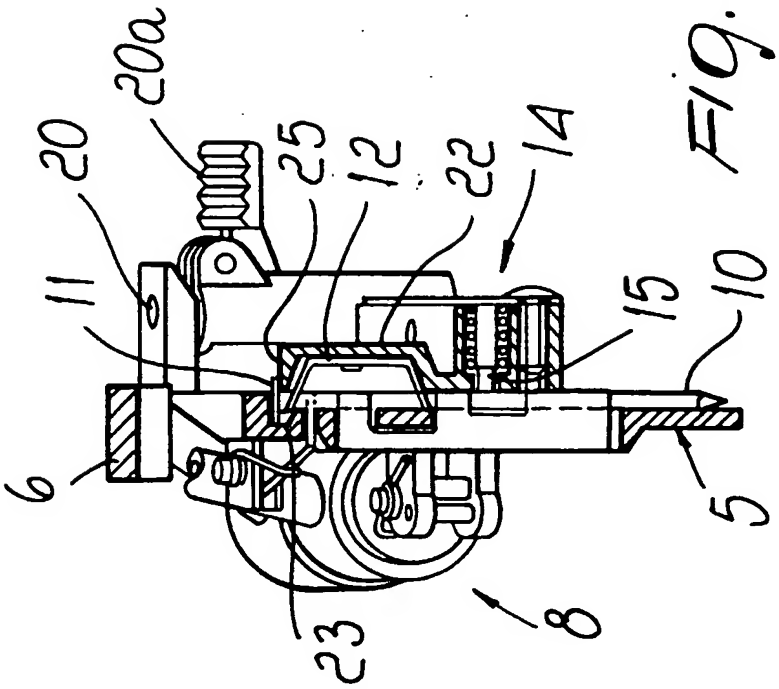

Fig. 3

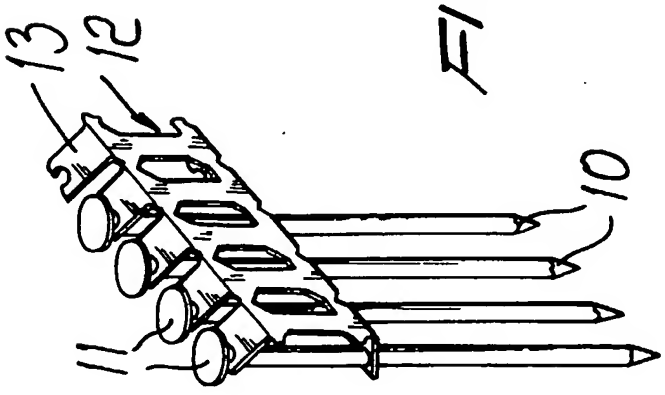

Fig. 5

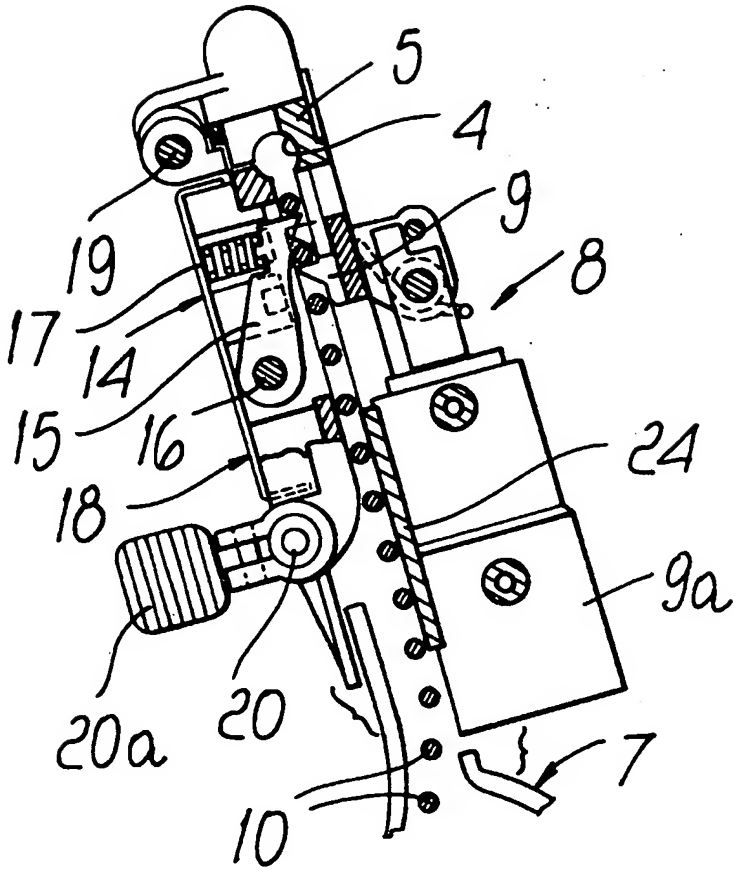

Fig. 4